Original research

Oral health status and treatment needs among health-care workers in Kanpur Nagar, Uttar Pradesh, India. A Cross Sectional study.

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Abstract: Objectives: To assess oral health status and treatment needs of the health workers in Kanpur , Uttar Pradesh. **Materials and Methods:** A cross-sectional study was conducted among health workers in Kanpur, Uttar Pradesh. A sample of 130 was selected by selecting three blocks randomly to get a required sample size of 126. Clinical recordings were done according to the World Health Organization diagnostic criteria 1997. The data were analyzed using SPSS package, Chicago, IL, version 16.0. The statistical tests used were *t*-test and ANOVA. A $P < 0.05$ was considered to be statistically significant. **Results:** The mean age of the study population was 48.42 ± 5.94 with a range of 25-57. The prevalence of dental caries in the present study was 80%. The mean decayed, missing, and filled teeth were 6 ± 5.42 and were higher in females and the age group of 55-64 years. Only 17 (13.1%) had healthy periodontium and calculus was found in 49 (47.7%) subjects. The need for prosthesis in upper jaw and lower jaw was for 33 (25.3%) and 61 (46.9%), respectively. **Conclusion:** The caries experience of the population was quite high. Hence, there is a need for treatment camps, and regular follow-up checkups for the health workers in Kanpur nagar.

Keywords: Dental caries, health workers, treatment needs, pregnancy, oral health.

Introduction :

Health is one of the most valuable assets one can possess. Oral health is now recognized as equally important in relation to general health.[1] Oral health means more than healthy teeth. The World Health Organization (WHO) has a definition of good oral health: "Oral health means being free of chronic mouth and facial pain, oral and throat cancer, oral sores, birth defects such as cleft lip and palate, periodontal (gum) disease, tooth decay and tooth loss, and other diseases and disorders that affect the mouth and oral cavity."[2] Several oral diseases have important side effects on general health, while systemic conditions may show a mutual influence on oral health. Therefore, oral health care needs to be addressed by a multi-professional approach and should be integrated into comprehensive health-promoting strategies and practices.[3] The WHO too has urged its member states to consider mechanisms to incorporate the essential oral health services into the existing primary health-care system, with emphasis placed on disease prevention and health promotion for the poor and the disadvantaged populations.[4] "Primary health care," rural health infrastructure has been designed to cover rural population

through subcenters, primary health centers (PHC) and community health centers (CHCs).[5] In Kanpur Nagar , there are 2 PHC's, 3 CHC's, 9 civil hospitals and 4 subcenters.[6] It has been shown that rural Indian community, who constitute more than 70% of the Indian population, has a low level of oral health awareness and practice when compared to urban. [7] Oral health status of health workers will reflect their knowledge and attitude toward oral health to a great extent. They can influence the community as they can extend health education at the first contact in the community and hence should possess good oral health.

Literature on the oral health knowledge and oral health status of health-care workers in India is almost nonexistent. Hence, this study was carried out to assess oral health status and treatment needs of the health workers in Kanpur Nagar.

Material and methods:

A cross-sectional study was conducted among multipurpose health-care workers (both males and females) in Kanpur Nagar, Uttar Pradesh, India for duration of 4 months. The necessary ethical clearance was sought from the Ethical Committee of Rama Dental College and Hospital, Kanpur . Prior permission was taken from the Chief Medical Officer, Kanpur Nagar to conduct the oral health examination. Informed consent was also taken from each subject before recording oral health.
A pilot study was conducted on thirty subjects which gave us a prevalence rate of 91%. To estimate this proportion with a 95% confidence interval of proportion and error of 5% the sample size required was 126 subjects using the formula:

$n_0 = z^2 \times pq/d^2$, where: n_0 is the sample size, z is the value for the selected alpha level, p is the estimated proportion of an attribute that is present in the population, q is $1 - p$, d is the acceptable margin of error for proportion being estimated. For administrative purposes, Kanpur Nagar is divided into eleven developmental blocks, namely Sarsaul, Kalyanpur, Bidhanoo, Shivrajpur, Bidhnu, Ghatampur, Bhillaur, Chaubeybpur, Kakwan, Patara, Bheetargaon.[6] Hence, three blocks namely Kalyanpur, Shivrajpur, Chaubeypur were selected randomly to get the required sample size.

Inclusion criteria
The health workers present on the day of visit.

Exclusion criteria
Those who refused for oral health examination.

A Type III clinical examination was conducted. A single trained examiner who was calibrated in the department of Public Health Dentistry, Rama Dental College, conducted all the examinations. Intraexaminer calibration was done by examining 15 subjects followed by their reexamination after 10 days which resulted in a kappa value of 0.74. The examiner was assisted by an alert and cooperative recording assistant. Data were collected using a modified the WHO Performa. [7] The data were analyzed using SPSS version 16 (SPSS., Chicago, IL). The test of significance used was *t*-test and ANOVA. $P < 0.05$ was considered to be statistically significant.

Results:

Out of total 130 subjects, there were 60 (46.2%) males and 70 (53.8%) females. The mean age of the study population was 48.42 ± 5.94 with a range of 25-57. Most of them were in the age group of 45-54 years. Most of the participants 62 (47.7%) had a qualification of matriculation followed by 12 th pass 32 (24.6%). Toothbrush was used by 97.7% and toothpaste by 121 (93.1%). The frequency of brushing twice was reported by 79 (60.8%), Table 1.

Variable	*n* (%)
Gender	
Male	60 (46.2)
Female	70 (53.8)
Age groups (years)	
25–34	4 (3.07)
35–44	12 (9.2)
45–54	94 (70.7)
55–64	20 (15.3)
Level of education	
10th pass	62 (47.7)
12th pass	32 (24.6)
Graduation	23 (17.7)
Postgraduation	13 (10.0)
Oral hygiene aid used	
Toothbrush	127 (97.7)
Finger	3 (2.3)
Tree stick	0
Oral hygiene material used	
Toothpaste	121 (93.1)
Tooth powder	9 (6.9)
Charcoal	0
Salt	0
Frequency of brushing	
Once	51 (39.2)
Twice	79 (60.8)

Table 1: Demographic profile of the subjects

The prevalence of dental caries in the present study was 80%. The mean decayed, missing, and filled teeth (DMFT) were 6 ± 5.42. The mean DMFT was higher among females 6.43 ± 6.01 than males 5.50 ± 4.64, but the difference was not statistically significant. The mean of various age

groups is given in table and the difference among the groups was statistically significant (*P* = 0.03) Table 2. Mean number of DMFT was 2.05 ± 1.96, 3.24 ± 4.38, 0.99 ± 1.79, respectively. Mean number of subjects requiring one surface restoration, two surface restoration, pulp care, and extraction was 0.29, 0.65, 0.42, and 0.54.

Variable	Mean±SD	*P*
Age group		
25–34	3.75±2.87	0.03*
35–44	5.20±5.05	
45–54	5.97±5.52	
55–64	8.33±5.66	
Total	6.00±5.42	
Gender		
Male	5.50±4.64	0.91
Female	6.43±6.01	
Brushing frequency		
Once	5.70±5.08	0.97
Twice	6.27±5.64	

*Statistically significant, SD: Standard deviation

Table 2: Mean decayed, missing, and filled teeth according to age, gender and brushing frequency

Only 17 (13.1%) had healthy periodontium. Calculus was found in 49 (47.7%) followed by deep pockets in 29 (22.5%). Mean number of sextants was 1.83, 1.54, 1.52, 0.32, 0.42, for healthy, bleeding, calculus, shallow pockets, and deep pockets, respectively. Community periodontal index score was not significantly different between the genders (*P* = 0.084) and brushing frequency (*P* = 0.785) Table 3.

Score	*n* (%)
0: Healthy	17 (13.1)
1: Bleeding	23 (17.7)
2: Calculus	49 (37.7)
3: Shallow pockets	12 (9.2)
4: Deep pockets	29 (22.3)
Total	130 (100)
Mean number of sextants	
Score	**Mean±SD**
0: Healthy	1.83±1.91
1: Bleeding	1.54±1.59
2: Calculus	1.52±1.28
3: Shallow pockets	0.32±0.78
4: Deep pockets	0.42±0.79

SD: Standard deviation

Table 3: Distribution of subjects according to community periodontal index of treatment needs score

Subjects having prosthesis in upper arch and lower arch were same, i.e., 14 (10.2%). The need for prosthesis in upper jaw and lower jaw was 33 (25.3%) and 61 (46.9%), respectively. The need for prosthesis was almost same for males and females ($P = 0.241$) Table 4.

Prosthetic status and need	Number of subjects (%)	
	Maxilla	Mandible
Prosthetic status	14 (10.7)	14 (10.7)
Prosthetic need	33 (25.3)	61 (46.9)

Table 4: Prosthetic status and need of the study subjects

Only 13 (10%) subjects had dental fluorosis. Moderate fluorosis was found in 5 (3.8%) followed by very mild in 4 (3.1%).

Discussion:

India is a vast country with the majority of people living in rural areas. [8] Following the Alma Ata Declaration of 1978 on the appropriateness of "primary health care," rural health infrastructure has been designed to cover rural population through subcenters, PHCs and CHCs. [5] As oral health is an integral component of general health, oral health care of the necessity has to be

delivered through primary health-care infrastructure. [9] Primary health-care workers might play a key role in promoting oral health in such areas. Hence, the health of these workers should be also of utmost concern to us. Good oral health is important because the experience of pain, problems with eating, chewing, smiling, and communication due to missing, discolored, or damaged teeth have a major impact on people's daily lives and well-being. The prevalence and recurrences of these impacts, restrict activities at work, and at home causing millions of work hours to be lost each year throughout the world. [10]

The present study intended to provide information about the oral health status, treatment needs of health workers in Kanpur Nagar.

In the present study, use of toothbrush and toothpaste was a universal finding. The frequency of brushing twice here was reported by 60.8%, which is higher than 52.1% as reported by Kaur *et al*. [11] and 20% as reported by Baseer *et al*. [12]
The prevalence of dental caries in the present study was 80% which is <97.2% as reported by Aggnur *et al*. [13] The mean DMFT in the present study was 6.0 which is in line with 5.02 as reported by Aggnur *et al*. [13] The mean DMFT was higher among females than males which may be because the flow rates of saliva and compositional analysis have been shown to be generally less protective in women than in men. [14] Alternatively, women have been the family member with the responsibility of food preparation. This would allow easier access to foods and snacks outside of mealtime, which provide bacteria in their oral flora with more substrate for caries development. [15] The mean DMFT increased with age.

The mean of decayed teeth was highest in the younger age group (3.25) and lowest in older age group (1.92) while the mean missing teeth were highest in older age group (4.92) and mean missing teeth was 0.0 in the age group of 25-34. This is mostly because of lack of knowledge about various restorative treatments in older age groups and lack of availability in those areas. The maximum treatment need was for two surface restoration in 57 (43.8%) followed by root canal therapy in 35 (26.9%), followed by extraction in 33 (25.3%) surface restoration.

In the present study, 13.1% had healthy periodontium which is higher than 2.2% and calculus was found in 47.7% which is also lower than 80.4% as reported by Aggnur *et al*. [13] This means that though periodontal health was better in our population, but still they lacked knowledge about the maintenance of oral hygiene or oral prophylaxis has not been availed.

The need for prosthesis was higher in lower arch than upper arch, and it was same for both the males and females.The most prevalent intraoral condition was abscess followed by leukoplakia and ulceration which is in contrast to the findings of national oral health survey where the most prevalent condition was ulceration followed by leukoplakia. All the subjects with leukoplakia in our study had a history of smoking for more than 15 years.

Conclusion:

The study was carried out on a population of 130 subjects. The prevalence of dental caries was quite high among the population especially the females and young age group. The treatment need was highest for two surface restorations, followed by root canal therapy. About half of the population had calculus. The need for prosthesis was higher than the prosthesis present, and it was almost same for both males and females. Hence, it is hereby recommended that the treatment camps should be arranged for them followed by regular checkup at a 6 month interval. Health education should be given to them to enhance their knowledge and practices toward oral health care for which will serve the community in the long way. Further studies are recommended in this area as very limited previous data is available.

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Conflict of interest:

None.

References:

1. Azodo CC, Ehizele AO, Umoh A, Ojehanon PI, Akhionbare O, Okechukwu R, et al. Perceived oral health status and treatment needs of dental auxiliaries. Libyan J Med 2010;5.
2. Hakansson S, Sturesson A. Oral Hygiene Experiences, Knowledge of Oral Health and Oral Diseases and Attitudes about Oral Health Care - A Questionnaire Study among Students of Nursing in Zambia; 2010.
3. Rabiei S, Mohebbi SZ, Patja K, Virtanen JI. Physicians′ knowledge of and adherence to improving oral health. BMC Public Health 2012;12:855.
4. Primary Health Care in India: Review of Policy, Plan and Committee Reports. Ministry of Health and Family Welfare, Government of India; 1993
5. National Oral Health Policy: Prepared by Core Committee, Appointed by Ministry of Health and Family Welfare; 1995.
6. New Delhi: 2012. District Level Demographics Statistical Information; 2012. Available from: http://www.districtdemographicstat.com/himachal/shimla/index.aspx. [Last cited on 2013 Aug 17].
7. World Health Organization. Oral Health Surveys. Basic Methods. 4 th ed. Geneva: World Health Organization; 1997. p. 26-9.
8. Bullet in on Rural Health Statistics in India. New Delhi: Issued by Infrastructure Division, Dept. of Family Welfare, Ministry of Health and Family Welfare, Nirman Bhavan; 2003.
9. Fourth Conference of Central Council of Health and Family WelfareProceedings and Resolutions. New Delhi, October 11-13, 1995. New Delhi: BUREAU of Planning, Directorate General of Health Services, Ministry of Health and Family Welfare, Govt. of

India; 1995.

10. Petersen PE, Bourgeois D, Ogawa H, Estupinan-Day S, Ndiaye C. The global burden of oral diseases and risks to oral health. Bull World Health Organ 2005;83:661-9.
11. Kaur S, Kaur B, Ahluwalia SS. Oral health knowledge, attitude and practices amongst health professionals in Ludhiana, India. Dentistry 2015;7:1-5.
12. Baseer MA, Alenazy MS, Alasqah M, Algabbani M, Mehkari A. Oral health knowledge, attitude and practices among health professionals in King Fahad Medical City, Riyadh. Dent Res J (Isfahan) 2012;9:386-92.
13. Aggnur M, Garg S, Veeresha K, Gambhir R. Oral health status, treatment needs and knowledge, attitude and practice of health care workers of Ambala, India - A cross-sectional study. Ann Med Health Sci Res 2014;4:676-81.
14. Ferraro M, Vieira AR. Explaining gender differences in caries: A multifactorial approach to a multifactorial disease. Int J Dent 2010;2010:649643.
15. Vieira AR, Marazita ML, Goldstein-McHenry T. Genome-wide scan finds suggestive caries loci. J Dent Res 2008;87:435-9.